

V. EMPIRE METAL

IDSHIP SECTION

LONGITUDINAL FRAMING AT BOTTOM & AT DECK.

ALL BULB ANGLES ARE TO NEW BRITISH STANDARD.

SCANTLINGS SHEWN APPLY AMIDSHIPS AND ARE TO BE

INCREASED FOR SHEER AS REQUIRED.

SCANTLINGS CLEAR OF CARGO

OIL TANKS SPECIALLY CONSIDERED.

L x D 460'-0" x 34'-0"

$$L \times (B+D) \quad 460'-0'' = (59'-0'' + 34'-0'')$$

L/O 460/34.

SIONS: 460'-0" B.P. x 59'-0" MLD x 34'-0" DEPTH MLD.

$1\frac{1}{2}'' = 1'-0''$

ATTACHMENT ANGLES TO BULKHEADS HYDRAULICALLY

ON THE GROUND PRIOR TO ERECTION

ATE SEAMS OR BUTTS ARRANGED IN WAY OF THE

CTIONS OF THE TRANSVERSES & STRINGERS TO BULKHEADS.

CTIONS MARKED THUS ✓ RIVET HOLES IN BOTH BAR & BULKHEAD

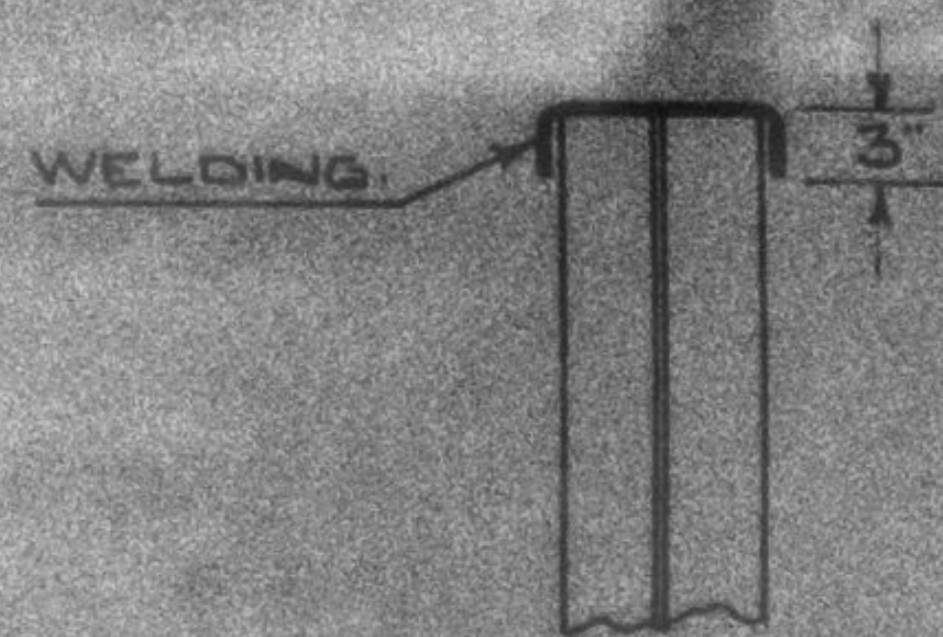
5 $1/16$ " SMALL AND CAREFULLY REAMERED OUT AFTER ASSEMBLY

TIONS THEN DISMANTLED AND SURFACES CLEANED AND ALL

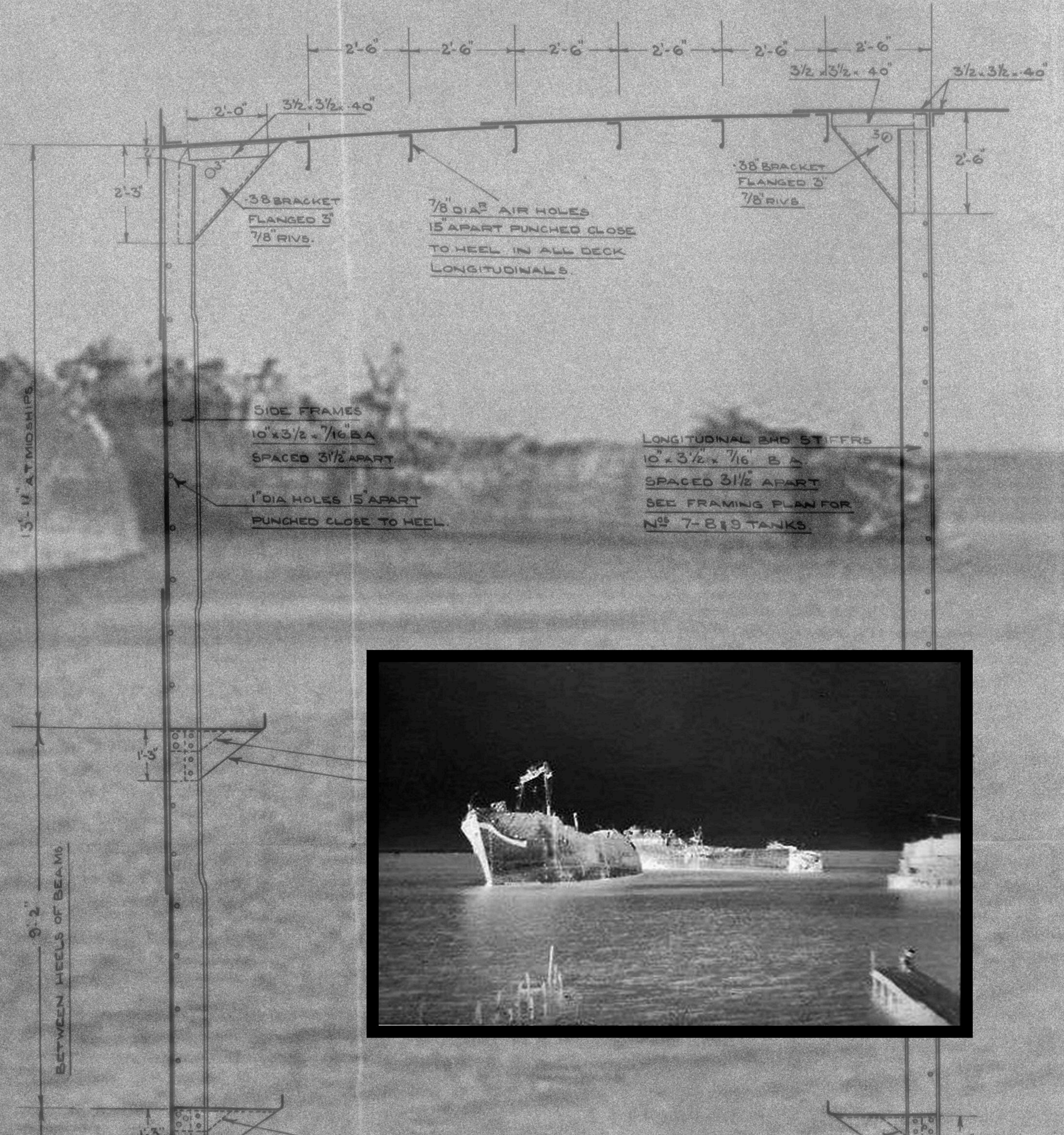
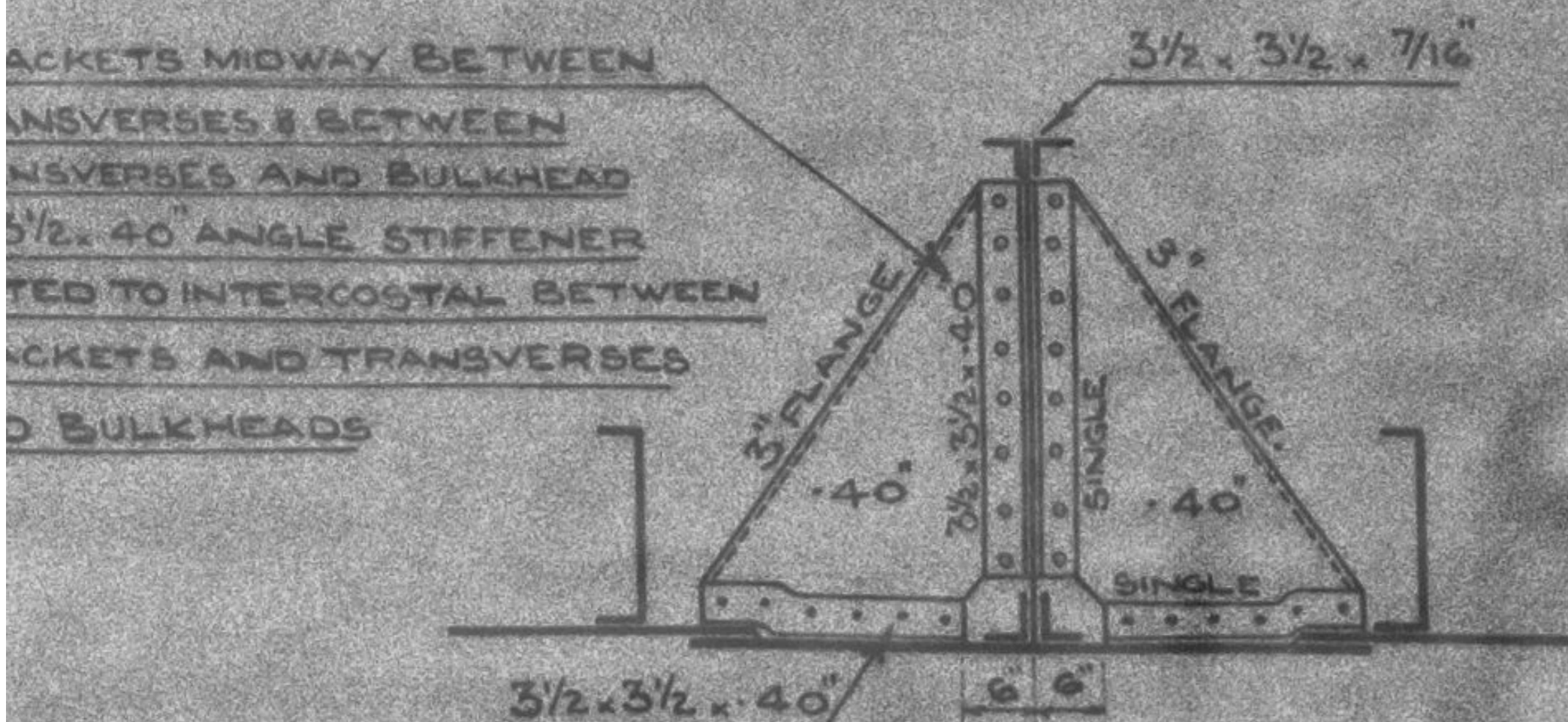
REMOVED ON RE-ASSEMBLY BOLT FITTED IN EVERY 3RD HOLE ALSO

HOLES AT BOTH ENDS OF BARS AND ALL THOROUGHLY HARDENED UP

BARS ON FACE SIDE OF BULKHEAD WELDED PRIOR TO RIVETING (SEE SKETCH)



DETAIL OF CENTRE GIRDER TRIPPING BKT



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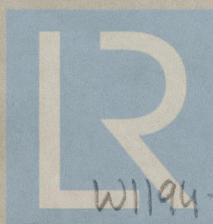
HARLAND & WOLFF'S

N^o 11605

"PLAN OF STEEL DECKS"

1160⁵ Empire Metal
GLASGOW REPORT No. 66140

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FINISHED MIDSHIP SECTION

N^o 1160 G. (EMPIRE METAL)

GLASGOW REPORT No. 66140

Similar to Empire One

Glas. Report No 64860

H & W 1083 G

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DIMENSIONS: 46'-0" B.P. x 59'-0" MLD x 34'-0" DEPTH MLD
SCALE 1/2" = 1'-0".

IN CONNECTIONS MARKED THUS ✓ RIVET HOLES IN BOTH BARS & BULKHEAD
PUNCHED 1/6" SMALL AND CAREFULLY REAMERED OUT AFTER ASSEMBLY
CONNECTIONS THEN DISMANTLED AND SURFACES CLEANED AND ALL
BURRS REMOVED ON RE-ASSEMBLY BOLT FITTED IN EVERY 3RD HOLE ALSO
IN BOTH HOLES AT BOTH ENDS OF BARS AND ALL THOROUGHLY HARDENED UP
END OF BARS ON FACE SIDE OF BULKHEAD WELDED PRIOR TO RIVETING (SEE SKETCH)

DETAIL OF CENTRE GIRDER TRIPPING BKT

[illegible]

A diagram showing a cross-section of a beam. A horizontal line is labeled "CENTRE GIRDER". Below it, a horizontal line is labeled "50 STRAP". Below that, a horizontal line is labeled "TRANSVERSE".

3" DIA HOLES SPACED 30" APART KEPT
ABOUT 1" ABOVE BOTTOM OF BAR & 1" ABOVE
TOE OF BACK BAR WHERE FITTED. HOLES
KEPT CLEAR OF ENDS OF BRACKETS

AFT END:- SHELL PLATING CLEAR OF LONGITUDINAL F
BOTTOM SHELL .69 FOR $\frac{1}{2}L$ TO .50 AT ENDS
SIDE SHELL FROM UPPER TURN OF BILGE TO STR
BELOW SHEER STRAKE .67 FOR $\frac{1}{2}L$ TO .47 AT EN
BASS PLATE .77 .600 FOR .50 L AND .4

FORE END. SHELL PLATING CLEAR OF LONGITUDINAL FRAMING
BOTTOM SHELL .69 FOR 1/2 L TO .50 AT ENDS
5 STRAKES NEXT KEEL .76 TOWARD POSITION OF COLL BULKS
SIDE SHELL FROM UPPER TURN OF BARGE TO STRAKE BELOW
SHEER STRAKE .67 FOR 1/2 L TO .47 AT END
FORECASTLE SIDE PLATING .43 BRIDGE SIDE PLATING .43

SECTION AT TRANSVERSES, LOOKING AFT

2 PLONGS NS	(8.5 D)	40.0 C	(59.0 C + 34.0 C)	= 4278.0
POOP	32.7 3/4"	7.5' 3/4"		= 521.12
BRIDGE	44.4 C	7.5'		= 2.47 .50
FORGETTLE	48.0 C	7.5' 3/4"		= 270.45
HOUSE ON POOP DECK	72.63	7.5' 1/2"		= 273.11
RAISED E & B CASING	50.5	15.5' 1/2"		= 38.17
HOUSE ON BRIDGE DK	41.37	7.5' 1/2"		= 155.13
OFFICE HOUSE ON UPPER BRIDGE	40.0	7.5' 1/2"		= 150.00
CHART ROOM, WHEEL HOUSE ETC	42.17	7.5' 1/2"		= 158.10
EQUIPMENT NS				= 44595.58

BOTTOM SHELL BUTTS:-	QUADRUPLE OVERLAPS TO TREBLE AT ENDS
DOUBLE SHELL BUTTS	" " " " "
SHELL LANDINGS	" DOUBLE RIVETED FOR 1 FT.
KEEL PLATE BUTTS	" QUINTUPLE OVERLAPS TO QUADRUPLE AT ENDS
SHEERSTAKE BUTTS	" " " " " FOR 1/2 LEN. TO TREBLE AT ENDS WHERE NOT EXCEEDING .68
STRAKE BELOW SHEERSTAKE BUTTS	QUADRUPLE OVERLAPS FOR 1/2 LEN TO TREBLE AT ENDS WHERE NOT EXCEEDING .68
THICK PLATES AT BREAKS	QUINTUPLE RIVETED OVERLAPS
UPPER OIL STRINGER BUTTS:-	QUADRUPLE OVERLAPS FOR 1/2 LEN TO TREBLE AT ENDS WHERE NOT EXCEEDING .68
UPPER DECK BUTTS	QUADRUPLE OVERLAPS FOR 1/2 LEN. WHERE ABOVE .68
" " "	TREBLE OVERLAPS FOR 1/2 LEN. WHERE NOT EXCEEDING .68
" " "	NOT LESS THAN DOUBLE OVERLAPS IN WAY OF OIL
THICK UPPER OIL STRINGER	"
PLATES AT BREAKS	" QUINTUPLE OVERLAPS
UPPER DECK LANDINGS	" DOUBLE RIVETED IN WAY OF OIL, SINGLE RIVETED ELSE
OILTIGHT BULKHEAD BUTTS	"
AND LANDINGS	" DOUBLE RIVETED

RIVETS IN BOTTOM LONGITUDINALS TO SHELL = $3\frac{1}{2}$ DIARS APART FOR 11 INVETS EACH SIDE OF TRANSVERSES & BULKHEADS. $4\frac{1}{2}$ DIARS THROUGHOUT IN NO. 8, 9, 10, 6 DIARS ELSEWHERE (NO. 8, 9, 10 TAKES SEE FRAMING PLAN)

RIVETS IN DECK LONGITUDINALS = 6 DIARS APART

1. " BEE FRAMES TO SHELL IN WAY OF OIL - $5\frac{1}{2}$ DIARS APART.
2. " FRAMES TO SHELL CLEAR OF OIL & PEAKS - 7 DIARS WHERE UNDER 20% - $6\frac{1}{2}$ DIARS WHERE OVER $20\frac{1}{2}\%$
3. " FRAMES TO SHELL IN PEAKS AND DEEP TANKS - $5\frac{1}{2}$ DIARS APART
4. " FRAMES TO FLOORS & REVERSE FRAMES CLEAR OF OIL - 10 DIARS APART
5. " FACE BARS TO FLOORS IN WAY OF OIL - 6 DIARS APART
6. " OILTIGHT BULKHEAD STIFFENERS - $5\frac{1}{2}$ DIARS APART
7. " FRAMES AND FLOORS IN AFTER PEAK - 5 DIARS APART
8. " FRAMES TO FLOORS & FRAMES TO SHELL ON BOTTOM FORWARD OF $\frac{1}{2}$ LEN FORWARD - $5\frac{1}{2}$ DIARS APART
9. " SHELL SEAMS IN WAY OF OIL 4 DIARS APART (CLEAR OF OIL AS PER RULE) $3\frac{1}{2}$ DIARS CLEAR OF OIL TANKS AND PEAKS
10. " UPPER DECK SEAMS AND BUTTS IN WAY OF OIL 4 DIARS APART WHERE EXCEEDING $50\frac{1}{2}$ DIARS APART WHERE THICKNESS IS .50" AND UNDER
11. " BUTTS OF KEEL SHEER STRAKE,

STRAKE BELOW SHEER STRAKE AND UPPER DECK STRINGER.	{	QUINUPLE BUTTS $4\frac{1}{2}$ DIARS APART.
		QUADRUUPLE BUTTS " " "
		TREBLE BUTTS $3\frac{1}{2}$ DIARS APART.
12. " OILTIGHT BULKHEAD FRAMES & SURROUND ANGLES 5 DIARS APART
13. " TRANSVERSE BEAMS TO SHELL IN WAY OF OIL - 5 DIARS APART
14. " TRANSVERSE FLOORS TO SHELL IN WAY OF LONGITUDINAL FRAMING 5 DIARS APART

BEE BARS ARE FITTED 6 DIARS APART WHERE INDICATED ON SECTION, $4\frac{1}{2}$ DIARS ELSEWHERE (8.5TH PLANGE)

1. " FACE BARS ON TRANSVERSE DECK BEAMS 6 DIARS APART
2. " BRACKET ATTACHMENTS WHERE NOT SPECIALLY INDICATED TO BE NOT MORE THAN 6 DIARS APART
3. " STRINGER FACE BARS IN WAY OF OIL 6 DIARS APART.

2 BOWS AND ANCHORS 73% CWTs EACH STOCKLESS
1 STREAM ANCHOR 22 CWTs (EX STOCK.)
240 FATHOMS 2 1/16 STUD LINK CHAIN CABLE
TWO SPARE ANCHORS AND TWO CABLE SHACKLES.
ONE BOX PINNED AND PUNCHED AND ONE SHACKLE PUNCH.
20 FATHOMS 5 1/2 (1/2) CIRC. WIRE STREAM
130 " 5 1/4 (3/4) CIRC WIRE TOW LINE.
2 @ 100 FATHOMS 2 3/4 (1/2) CIRC WIRE HAYSTERS
2 @ 100 " @ 2 3/4 (1/2) " " WARPS
ALL WIGOS TO BE ON REELS.

REELS FOR LARGE WIRES DOUBLE PURCHASE

② Harlow & Wolff
1160 G.

Details of Shafting

1160^G Empire Metal
GLASGOW REPORT No. 66140

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(4) Harland & Wolff. Ltd. 1160 G
A./MS. 265.

Crank Shaft.

1160^G Empire Metal
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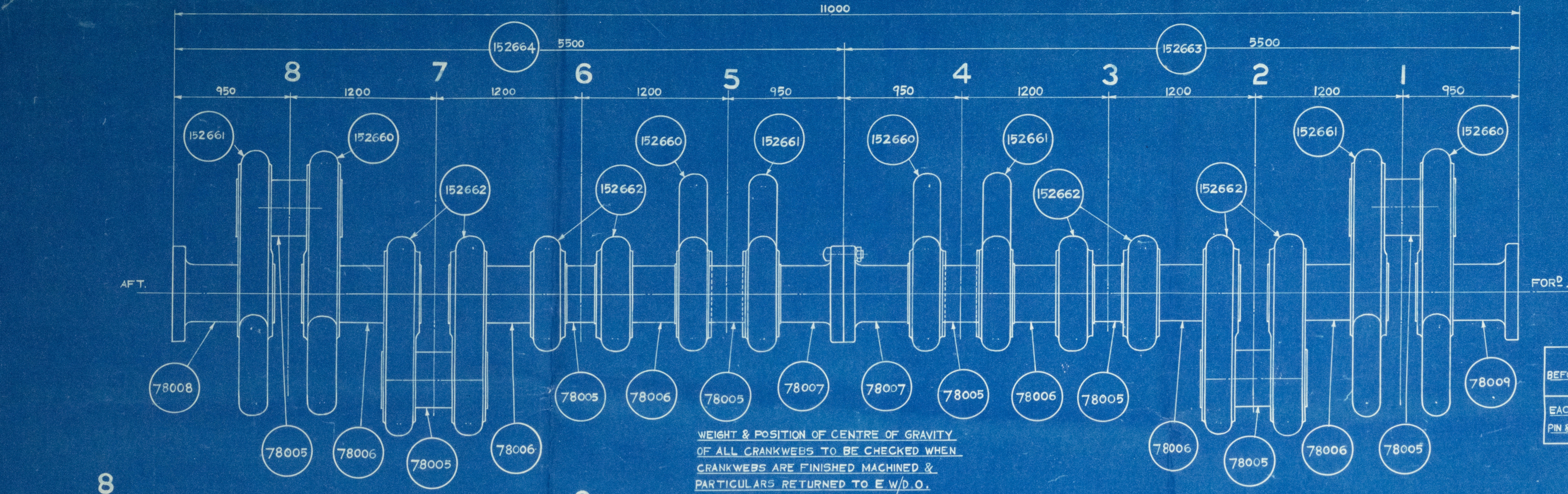


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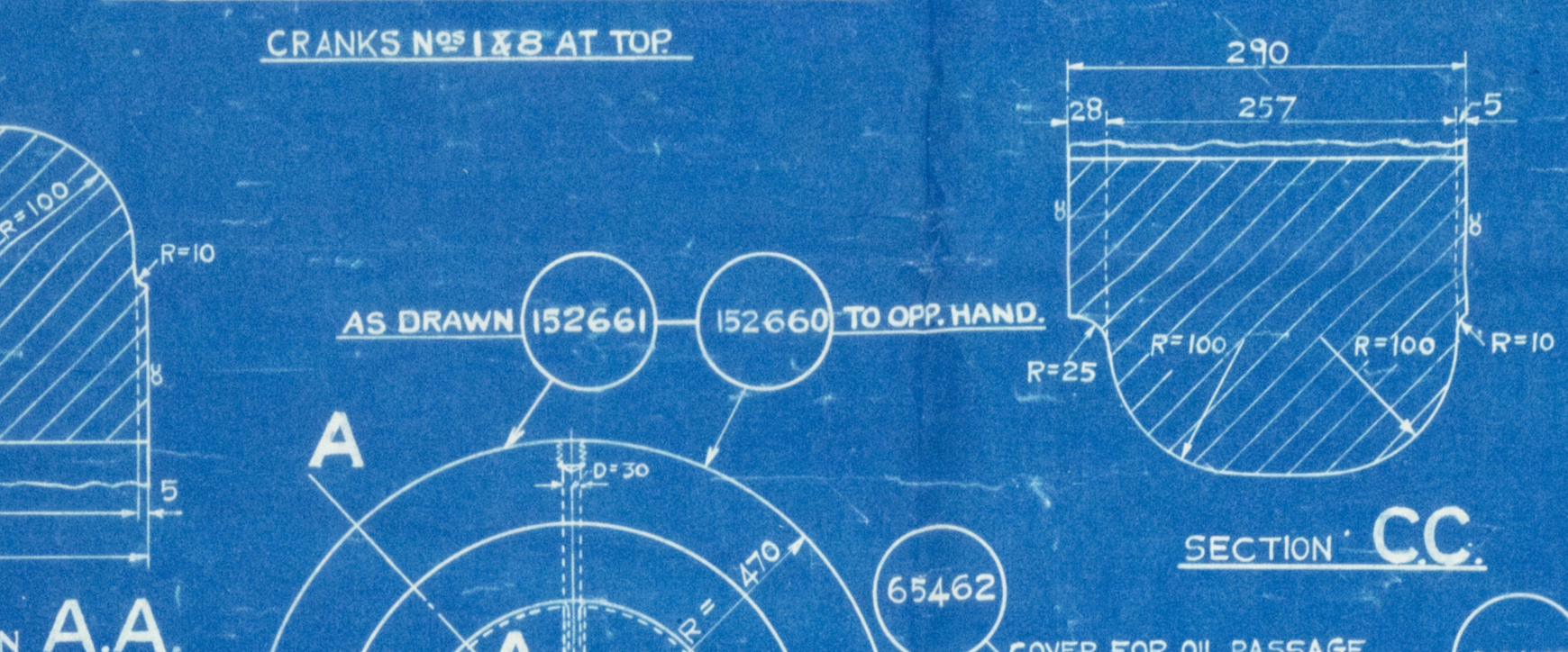
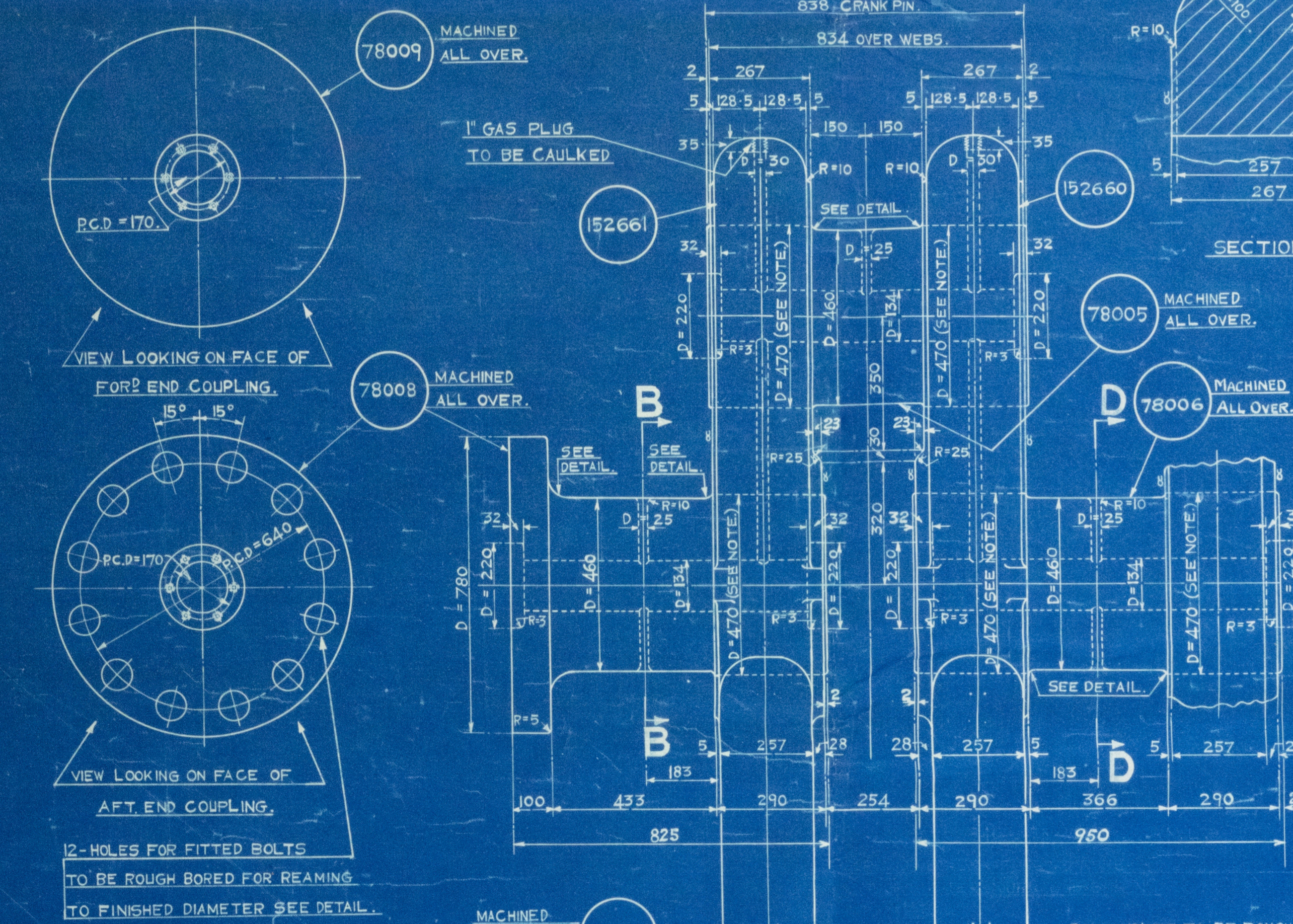
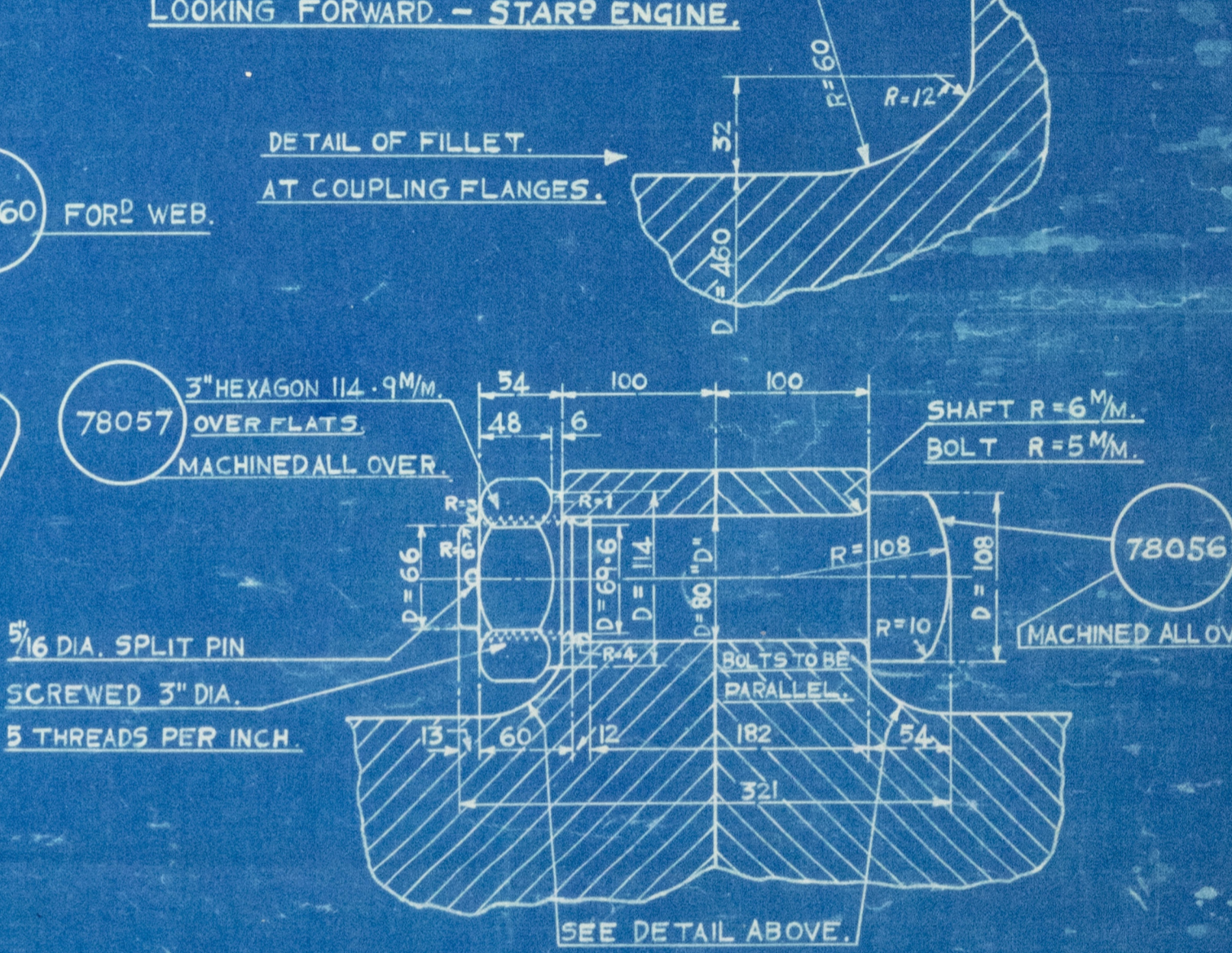
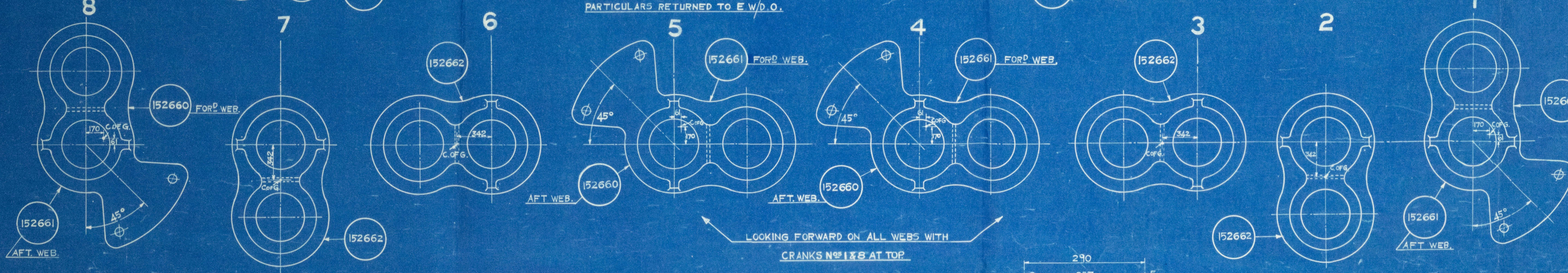
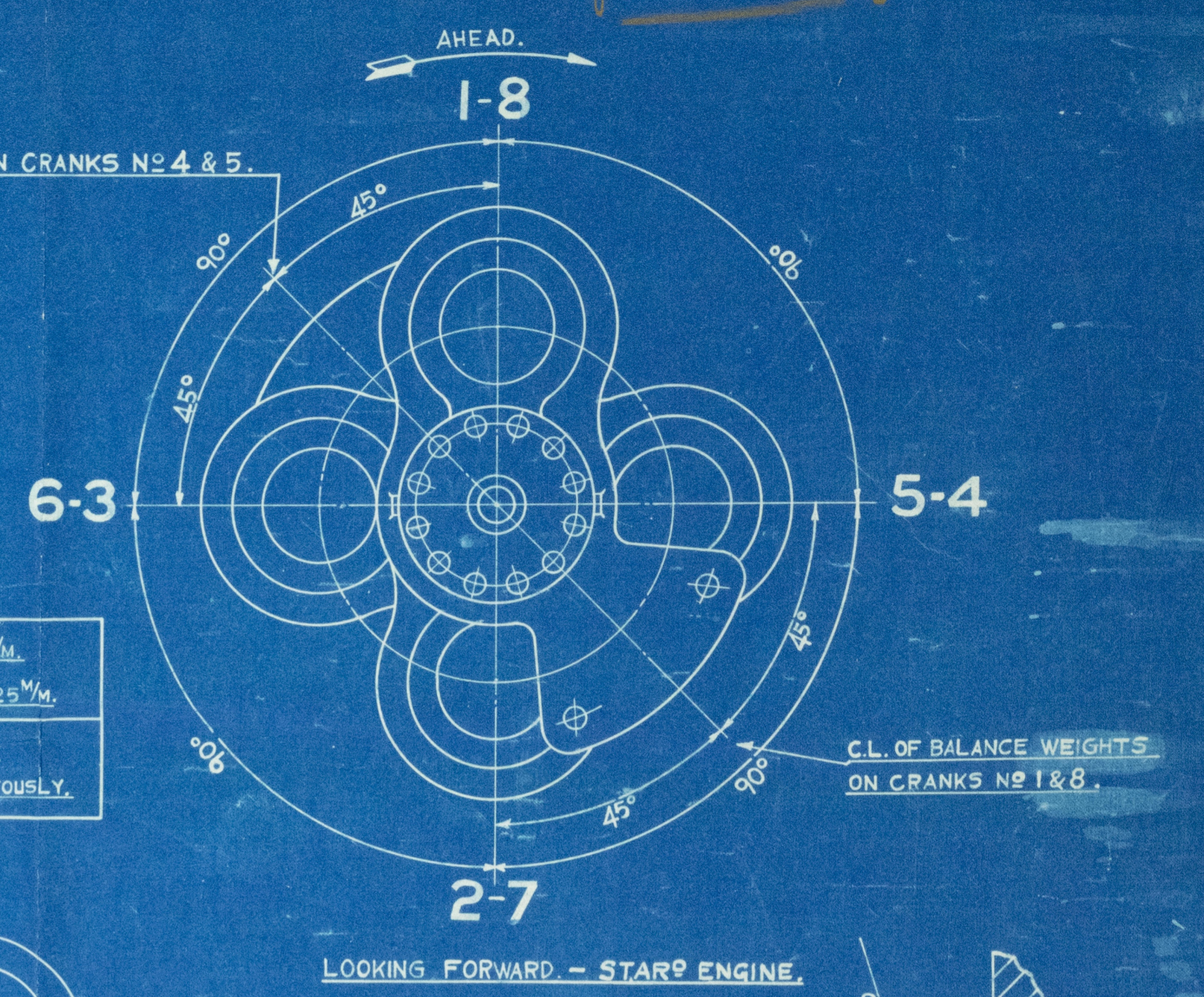
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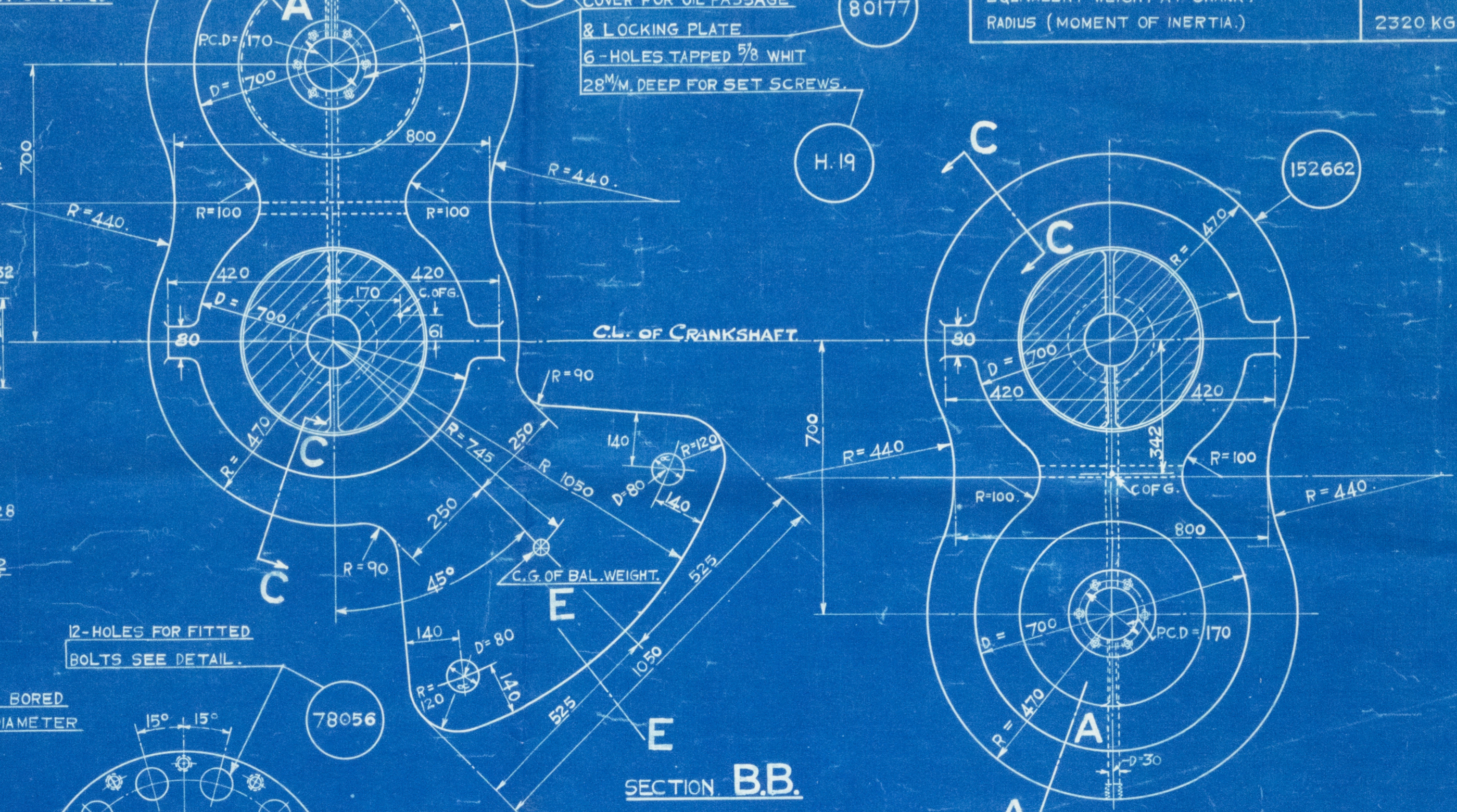
WEIGHT & POSITION OF CENTRE OF GRAVITY OF ALL CRANKWEBS TO BE CHECKED WHEN CRANKWEBS ARE FINISHED MACHINED & PARTICULARS RETURNED TO E.W.D.O.

NOTE:-
BEFORE SHRINKING: SHAFT DIA. = 470^{MM}
HOLE DIA. = 469.25^{MM}
EACH WEB TO BE HEATED ONCE ONLY.
PIN & JOURNAL TO BE ENTERED SIMULTANEOUSLY.

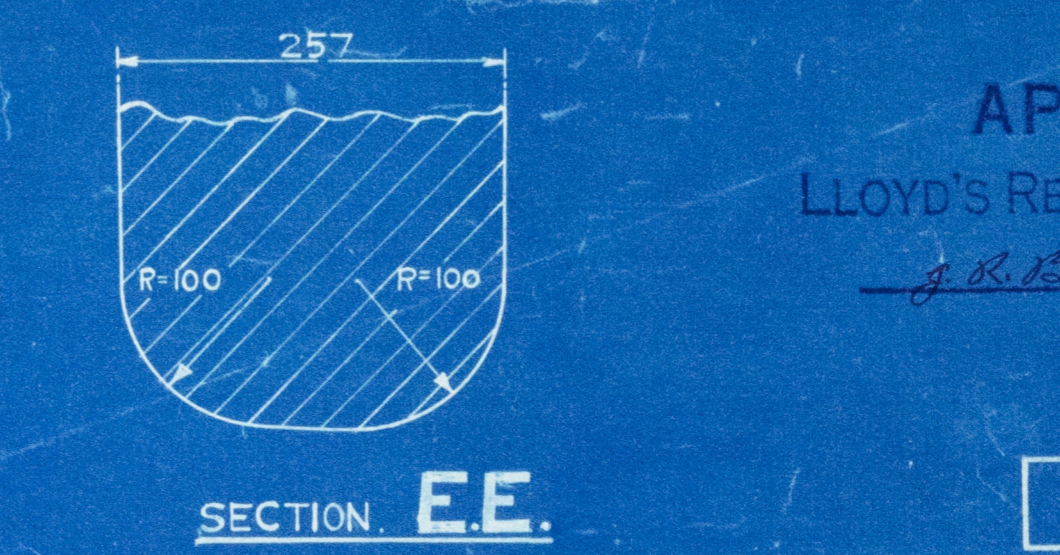
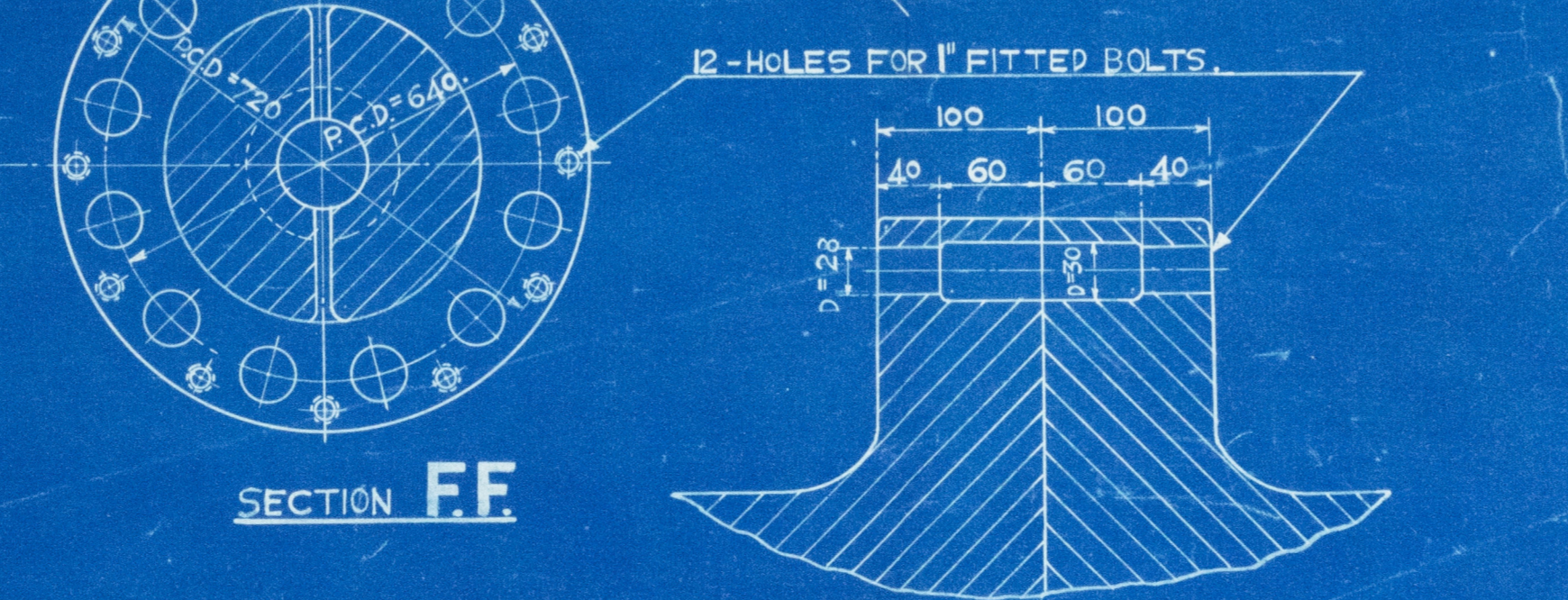
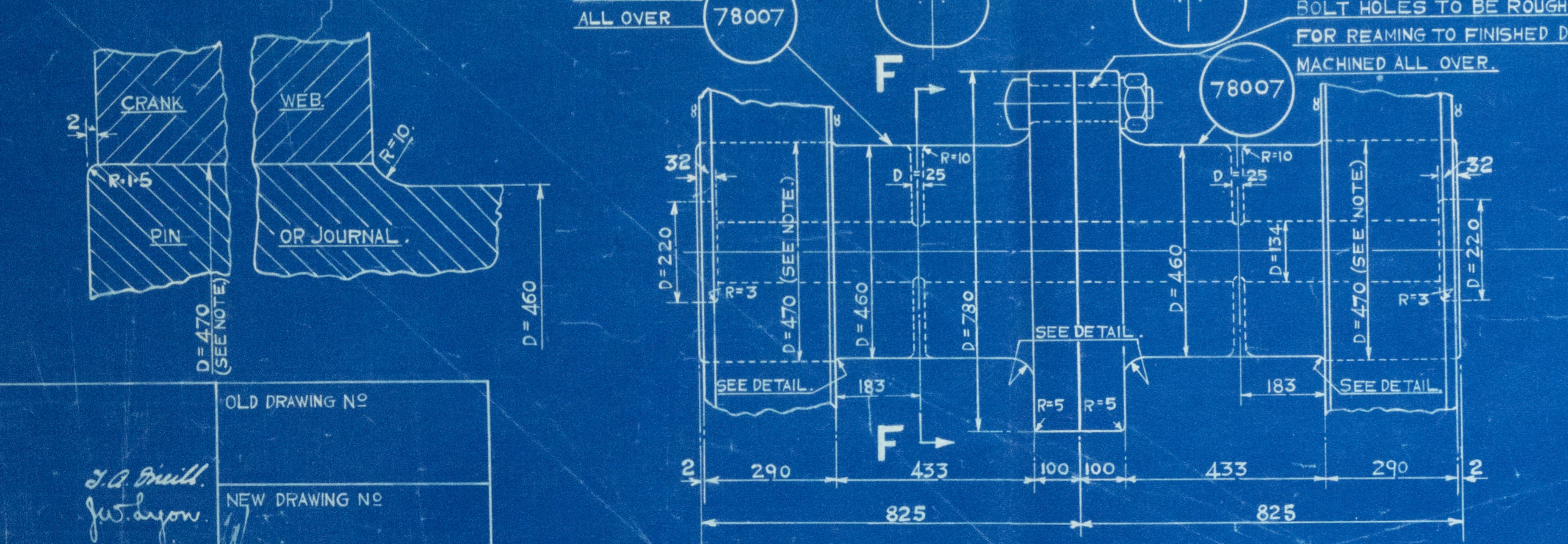


PARTICULARS OF BALANCE WEIGHTS PER CRANK.	CRANKS NOS 1, 4, 5 & 8.
EFFECTIVE WEIGHT AT CENTRE OF GRAVITY.	1780 KGS.
EQUIVALENT WEIGHT AT CRANK RADIUS (BALANCING PURPOSES).	1890 KGS.
EQUIVALENT WEIGHT AT CRANK RADIUS (MOMENT OF INERTIA).	2320 KGS.

MATERIAL:-
CRANK PINS, JOURNALS & COUPLINGS.
SIEMENS - MARTIN STEEL 28-32 TONS TENSILE TO THE SURVEY AUTHORITIES' REQUIREMENTS, TESTS & INSPECTION.
CRANK WEBS.
CAST STEEL, ELONGATION TO BE TO THE SURVEY AUTHORITIES' REQUIREMENTS FOR STEEL CASTINGS FOR CRANKWEBS.
THE YIELD POINT OF THE MATERIAL TO BE NOT LESS THAN 14 TONS PER SQ. INCH.
SHRINKAGE ALLOWANCE IS 62.67 OF THE DIAMETER.
NEWELL STANDARD LIMITS TO BE USED.



NO OFF PER ENGINE.	DESCRIPTION.	PATTERN NUMBER.	MATERIAL.	WEIGHT IN KGS.	REMARKS.	SHOPS.	SK. NO. OF JIG.
STAR 8	CRANKSHAFT (FOR? PART.)	152663	—	28472	BUILT FROM PARTS AS ORDERED		
ENGINE	" (AFT. PART.)	152664	—	28427	BUILT FROM PARTS AS ORDERED		
4	CRANKWEB WITH BALANCE WEIGHT.	152660	CAST STEEL	2750			
4	" " " "	152661	"	2750	SEE NOTE		
8	" " " " WITHOUT BALANCE WEIGHT.	152662	"	1860			
8	CRANK PIN.	78005	SIEMENS-MARTIN STEEL	1020	REGARDING		
6	CRANK JOURNAL.	78006	"	1140			
2	COUPLING END. (MIDDLE)	78007	"	1195			
1	" " (AFT.)	78008	"	1190	SHRINKING.		
1	" " (FOR?)	78009	"	1235			
12	COUPLING BOLT.	78056	M.S.3.	14			
12	NUT FOR COUPLING BOLT.	78057	WROT IRON	3.5			
34	COVER FOR OIL PASSAGE.	65462	C.I.	6	STD. DRG. NO 23107		
102	LOCKING PLATE.	80177	SOFT IRON.	"	" " " 23107		
204	3/8 SET SCREWS.	H.19	M.S.I.	"	" " " 23940		
16	1" GAS PLUG.	—	BAR STEEL.	"			
12	5/16 DIA. SPLIT PIN.	—	STEEL.	"	STOCK.		



APPROVED
LLOYD'S REGISTER OF SHIPPING
SA8 650 1400 A.I.P.I.
CRANKSHAFT

CODE NO 0421.